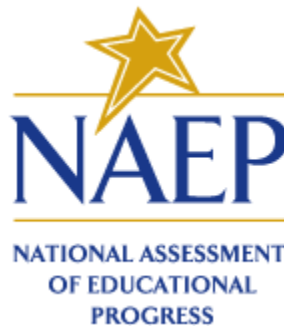


Data Collected Through the National Assessment of Educational Progress (NAEP)

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Data Collected Through the National Assessment of Educational Progress (NAEP)

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Module Objectives

- Provide information about the data collected through the National Assessment of Educational Progress (NAEP)
 - Assessment design and administration
 - Long-Term Trend Assessment
 - Main NAEP Assessments
 - Background questionnaires for students, teachers, and schools

Data Collected Through the National Assessment of Educational Progress (NAEP)**Slide 3 of 46****NAEP: A Common Yardstick**

- NAEP assessments are:
 - Administered uniformly using the same sets of test booklets across the nation
 - Essentially the same from year to year
 - A clear picture of student academic progress over time
- As NAEP moves into computer-based assessments, the assessment administration protocols will remain uniform recognizing the importance of continuing NAEP as a common metric
- However, new questions are added and some questions are retired over time

Slide 4 of 46**National Assessment Governing Board (NAGB)**

- Appointed by the Secretary of Education
- Sets policy for NAEP
- Develops the framework and test specifications that serve as the blueprint for the assessment
 - Assessment content
 - Numbers of content sub-scales and their weights toward the composite scale
 - Formats and proportion of items

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NAEP Administration

- NAEP field staff go into schools across the nation to administer assessment exercises to students
 - Cognitive items
 - Background questions
- Teachers and principals are asked to complete questionnaires
- Background questionnaire items provide context for student results

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NAEP Cognitive Items

NAEP uses two cognitive item formats

- [Multiple-choice](#)
- [Constructed-response](#)
 - Short constructed response
 - Extended constructed response
- Cognitive items developed varies by subject and grade
 - Reading item pool = ~100 – 170 items per grade
 - Mathematics item pool = ~180 – 200 items per grade
- NAEP has been exploring new testing methods and item types that reflect the growing [use of technology](#) in education
 - 2017 NAEP mathematics, reading, and writing assessments will be administered on tablets

Data Collected Through the National Assessment of Educational Progress (NAEP)**Slide 7 of 46****NAEP Assessment Design: Multiple Matrix Sampling**

- NAEP assessment booklets are constructed such that no student responds to all of the items in the item pool
- NAEP uses [multiple matrix sampling](#) to minimize testing burden and ensure broad subject-matter coverage
 - A participating student takes only a portion of the complete set of cognitive items developed for any assessment
 - Every item is exposed to about $\frac{1}{4}$ of the sample

Slide 8 of 46**NAEP Assessment Design: Balanced Incomplete Block Design**

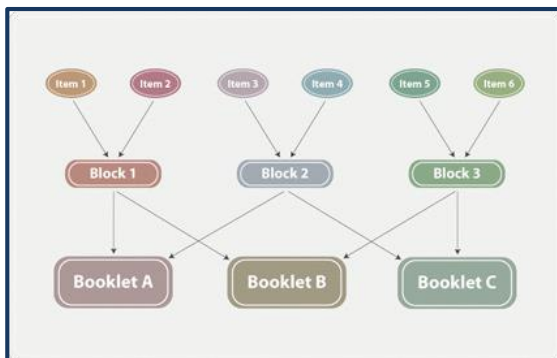
NAEP uses a Balanced Incomplete Block (BIB) design to distribute the assessment items among students, yet retain linkages necessary for scaling the achievement data with [Item Response Theory \(IRT\)](#) models

- NAEP assessment items are clustered in blocks
- Blocks are used to create test booklets containing interlocking blocks of items
- Each block paired with every other block once
- Each block appears once in every position of the booklets

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NAEP Assessment Design: Items to Blocks to Booklets

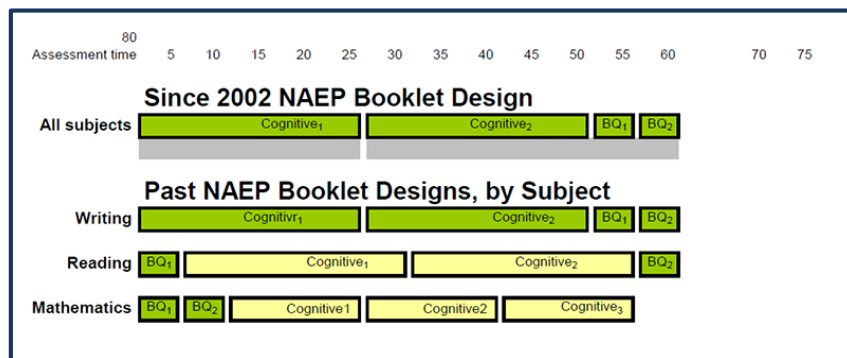


- Each block of items is presented to equal portions of students
- Sub-samples of students receiving different booklets are statistically equivalent

Booklet	1 st block	2 nd block
A	1	2
B	2	3
C	3	4
D	4	5
E	5	6
F	6	7
G	7	1

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A Student Booklet: Cognitive Items and Background Questions



A test booklet contains two 25-minute or one 50-minute set of cognitive items depending on the content and grade of assessment

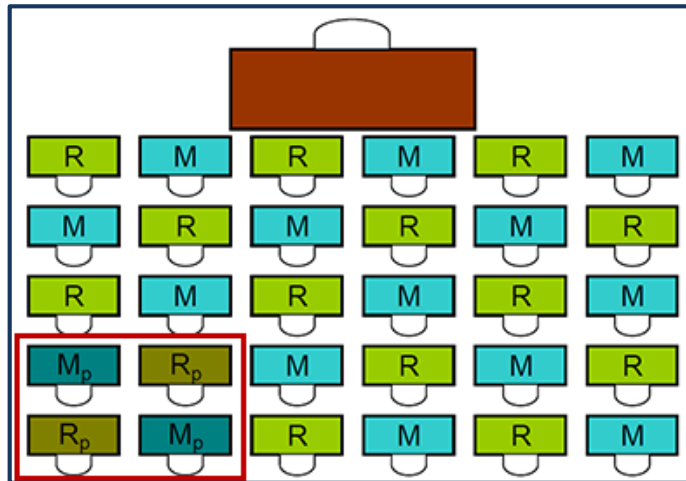
BQ1 represents first set of background questions asking generic background questions; BQ2, the second set, is also a five-minute questionnaire asking subject-specific background questions

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Booklets to Students: Spiraled Distribution

- Booklets are bundled according to sequences designed to ensure equal distribution of items, blocks, and booklets across all sessions
- Booklets are alternated within each sequence when multiple subjects are assessed in a year
- Booklets are added to the sequence at a lower rate when special studies, pilot, and/or field-tests are conducted



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Long-Term Trend Reading Assessment

Assessment designed to measure students' ability to:

- Locate specific information
- Make inferences based on information in two or more parts of a passage
- Identify the main idea in a passage

Data Collected Through the National Assessment of Educational Progress (NAEP)**Slide 13 of 46****Long-Term Trend Reading Assessment (Continued)**

- Students read and answer questions based on a variety of materials including:
 - Informational passages (passages from textbooks)
 - Literary texts (brief stories)
 - Documents
 - Other age-appropriate reading material
- Comprehension of these materials is assessed using multiple-choice and constructed-response questions
- Current Long-Term Trend reading assessment [framework](#)

Slide 14 of 46**Long-Term Trend Mathematics Assessment**

Assessment designed to measure

- Knowledge of basic facts, ability to carry out computations using paper and pencil
- Knowledge of basic measurement formulas as they are applied in geometric settings
- Ability to apply mathematics to daily-living skills

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Long-Term Trend Mathematics Assessment (Continued)

- Computational focus
- Contains a range of multiple-choice and constructed-response questions that cover:
 - Numbers and numeration
 - Measurement
 - Shape, size, and position
 - Probability and statistics
 - Variables and relationships
- Current Long-Term Trend mathematics assessment [framework](#)

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Main NAEP Assessments

NAEP administers assessments in 12 subject areas

- The Arts
- Civics
- Economics
- Foreign Language
- Geography
- Mathematics
- Reading
- Science
- Technology and Engineering Literacy
- U.S. History
- World History
- Writing

Data Collected Through the National Assessment of Educational Progress (NAEP)

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NAEP Arts Assessment

- The NAEP 2008 arts assessment measured the extent of what American students know and can do in the arts disciplines of music and visual arts
- Measured students' knowledge and skills in the arts by asking them to observe, describe, analyze, and evaluate existing works of music and visual art and to create original works of visual art
- Current arts assessment [framework](#)

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NAEP Arts Assessment (Continued)

Arts Subject	Kinds of Exercises	
	Creating: <i>assess with performance tasks</i>	Responding: <i>assessed with written exercises and multiple-choice questions</i>
Music	Listen to a rhythmic pattern and then complete the measure.	Listen to pieces of music and then analyze, interpret, critique, and place the pieces in historical context.
Visual Arts	Using oil pastels, a mirror, and a charcoal pencil, create a self-portrait that communicates to a viewer something important about one's personality.	Study artworks and then do exercises exploring aesthetic properties and expressive aspects of the works.

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NAEP Civics Assessment

- Measures the civics knowledge, skills, and dispositions that are critical to the responsibilities of citizenship in America's constitutional democracy
- Administered to students at grades 4, 8, and 12
- Organized around three main components:
 - Civic knowledge
 - Intellectual and participatory skills
 - Civic dispositions
- Current civics assessment [framework](#)

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NAEP Civics Assessment (Continued)

Subject Areas	Knowledge/Skills Measured
Civics Knowledge (5 Categories)	<ul style="list-style-type: none"> • What are civic life, politics, and government? • What are the foundations of the American political system? • How does the government established by the Constitution embody the purpose, values, and principles of American democracy? • What is the relationship of the United States to other nations and to world affairs? • What are the roles of citizens in the American democracy?
Intellectual Skills (3 skills)	<ul style="list-style-type: none"> • Identifying and describing • Explaining and analyzing • Evaluation, taking, and defending positions
Civics Dispositions (5 dispositions)	<ul style="list-style-type: none"> • Becoming an independent member of society • Assuming the personal, political, and economic responsibilities of a citizen • Respecting individual worth and human dignity • Participating in civic affairs in an informed, thoughtful, and effective manner • Promoting the healthy functioning of American constitutional democracy

Data Collected Through the National Assessment of Educational Progress (NAEP)

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NAEP Economics Assessment

- The 2012 NAEP economics assessment measured 12th graders' understanding of how economies and markets work, the benefits and costs of economic interaction and interdependence, and the choices people make regarding limited resources
- The economics assessment measured and reported results for three main content areas:
 - Market Economy
 - National Economy
 - International Economy
- Current economics assessment [framework](#)

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NAEP Economics Assessment (Continued)

Question Context	Type of Economics Knowledge Assessed
Individual and Household	Personal finance (e.g., earning, spending, saving, borrowing, and investing)
Business	Entrepreneurs, workers, producers, and investors
Public	Government, policy, citizenship, and domestic and international organizations

Data Collected Through the National Assessment of Educational Progress (NAEP)

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NAEP Foreign Language Assessment

- Scheduled to be added to the NAEP assessment cycle beginning in 2018
- Expected to measure four skills:
 - Listening
 - Speaking
 - Reading
 - Writing
- These four skills can be assessed within three modes of communication:
 - Interpersonal (involving two-way interactive communication)
 - Interpretive (relating to the understanding of spoken or written language)
 - Presentational (involving creating spoken or written communication)
- Current foreign language assessment [framework](#)

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NAEP Foreign Language Assessment (Continued)

Performance will be evaluated by how well the student understands and can be understood

- Subsumes language knowledge, the appropriate use of communication strategies, and the application of cultural knowledge to enhance communication

Foreign Language Assessment

Listening and speaking in the interpersonal mode

Reading and listening in the interpretive mode

Writing in the presentational mode

Data Collected Through the National Assessment of Educational Progress (NAEP)

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NAEP Geography Assessment

Organized around two primary dimensions, and each question has a content and cognitive skills dimension

- Content dimension includes three areas
 - Space and place (knowledge of geography related to particular places on Earth, spatial patterns on Earth's surface, and physical and human processes that shape spatial patterns)
 - Environment and society (knowledge of how people depend upon, adapt to, are affected by, and modify the natural environment)
 - Spatial dynamics and connections (understand geography as it relates to spatial variations and the connections among people and places)
- Cognitive dimension includes three categories
 - Knowing (What is it? Where is it?)
 - Understanding (Why is it there? How did it get there? What is its significance?)
 - Applying (How can knowledge and understanding be used to solve geographic problems?)
- Current geography assessment [framework](#)

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NAEP Geography Assessment (Continued)

Grade (Year)	Example Question Types (Easy, Medium, Hard)
4 (2010)	<ul style="list-style-type: none"> • Recognize how land is used in the photograph • Identify a continent • Draw the safest route on map
8 (2001)	<ul style="list-style-type: none"> • Earthquake: mark X on epicenter • Map interpretation • Population pattern differences
12 (2010)	<ul style="list-style-type: none"> • Identifying origin of most Hispanic people from graph • Understanding how the Great Lakes were formed • Describe air mass across Great Lakes

Data Collected Through the National Assessment of Educational Progress (NAEP)

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NAEP Mathematics Assessment

- Measures students' knowledge and skills in mathematics and students' ability to apply their knowledge in problem-solving situations
- Grades 4 and 8 questions are based on five content areas
 - Number properties and operations
 - Measurement
 - Geometry
 - Data analysis, statistics, and probability
 - Algebra
- Grade 12 questions reflect [changes](#)
 - In high school standards and coursework (2005)
 - To facilitate reporting on 12th graders' preparedness for postsecondary education and training (2009)
- Current mathematics assessment [frameworks](#)

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NAEP Mathematics Assessment (Continued)

Grade (Year)	Sample Question Types (Easy, Medium, Hard)
4 (2013)	<ul style="list-style-type: none"> • Multiply three whole numbers • Recognize results of cutting and folding paper • Draw a line segment of a given length
8 (2013)	<ul style="list-style-type: none"> • Measure length of a line segment • Determine complete sample space • Interpret slope from verbal description
12 (2013)	<ul style="list-style-type: none"> • Read a scatterplot • Identify formula to solve problem using spreadsheet • Analyze conjunction and disjunction of inequalities

Data Collected Through the National Assessment of Educational Progress (NAEP)

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NAEP Reading Assessment

- The NAEP reading assessment measures students' reading and comprehension skills by asking them to read selected grade-appropriate passages and answer questions based on what they have read
- Students are assessed on their ability to:
 - Understand written text
 - Develop and interpret meaning
 - Use meaning
- Three areas assessed
 - Literary and informational texts
 - Cognitive targets (mental processes and kinds of thinking that underlie reading comprehension)
 - Vocabulary
- Current reading assessment [framework](#)

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NAEP Reading Assessment (Continued)

- Literary and informational texts
 - Literary texts (fiction, literary nonfiction, and poetry)
 - Informational texts (exposition; argumentation and persuasive text; and procedural text and documents)
- Cognitive targets
 - Locate and recall (identify explicitly stated main ideas or story elements)
 - Integrate and interpret (make comparisons, explain motivation, relate ideas across text)
 - Critique and evaluate (view text critically, examine it from numerous perspectives, evaluate text quality or effectiveness)
- Vocabulary (integrate understanding of the word with passage comprehension)

Data Collected Through the National Assessment of Educational Progress (NAEP)

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NAEP Reading Assessment (Continued)

Grade (Year)	Sample Question Types (Easy, Medium, Hard)
4 (2013)	<ul style="list-style-type: none"> Recognize explicitly stated dialogue from a story Use story events to support an opinion about a story genre Interpret thematic connection between two literary texts and support with details
8 (2013)	<ul style="list-style-type: none"> Explain relation of phrase to main point of persuasive essay Recognize implicit supporting idea in persuasive essay Explain relation of paragraph to main point of persuasive essay
12 (2013)	<ul style="list-style-type: none"> Explain relation of phrase to main point of persuasive essay Explain relation between specific paragraph and author's main point Explain central purpose of speech with supporting ideas

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NAEP Science Assessment

- Designed to measure students' knowledge of three broad content areas:
 - Physical science
 - Life science
 - Earth and space sciences
- Four science practices describe how students use their science knowledge by measuring what they are able to do with science content
 - Identifying science principles
 - Using science principles
 - Using scientific inquiry
 - Using technological design
- Current science assessment [framework](#)

Data Collected Through the National Assessment of Educational Progress (NAEP)

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NAEP Science Assessment (Continued)

Grade (Year)	Sample Question Types (Easy, Medium, Hard)
4 (2009)	<ul style="list-style-type: none"> Identify the organism with a change in habitat from young to old Predict the shape of the moon Relate a weather condition to patterns in data
8 (2011)	<ul style="list-style-type: none"> Predict a geological consequence of tectonic plate movement Identify the atomic components to the molecule Identify chemically similar elements in the Periodic Table
12 (2009)	<ul style="list-style-type: none"> Determine relationships between species based on evolutionary tree Recognize atomic particles in an ion Recognize the nuclear fission reaction

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NAEP Technology and Engineering Literacy Assessment

- 8th grade students throughout the nation took the NAEP Technology and Engineering Literacy (TEL) assessment in the winter of 2014
- Computer-based, cross-curricular assessment that challenges students to perform interactive tasks and engage in solving problems within realistic scenarios
- Focused on student knowledge about:
 - Technology
 - Engineering
 - How technology and engineering shapes their lives
- Current TEL assessment [framework](#)

Data Collected Through the National Assessment of Educational Progress (NAEP)

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NAEP U.S. History Assessment

- Presents a broad view of what our students know about U.S. History in the context of democracy, culture, technological and economic changes, and our nation's changing world role
- Organized around three components
 - Themes in U.S. History
 - Periods of U.S. History
 - Ways of Knowing and Thinking about U.S. History
- Current U.S. History assessment [framework](#)

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NAEP U.S. History Assessment (Continued)

Types of Questions	Types of Information Assessed
Historical knowledge and perspective	<ul style="list-style-type: none"> • Knowing and understanding people, events, concepts, themes, movements, contexts, and historical sources • Sequencing events, recognizing multiple perspectives and seeing an era or movement through the eyes of different groups • Developing a general conceptualization of U.S. History
Historical analysis and interpretation	<ul style="list-style-type: none"> • Explaining issues and identifying historical patterns • Establishing cause-and-effect relationships • Finding value statements • Establishing significance • Applying historical knowledge • Weighing evidence to draw sound conclusions • Making defensible generalizations • Rendering insightful accounts of the past

Data Collected Through the National Assessment of Educational Progress (NAEP)**Slide 37 of 46****NAEP World History Assessment**

- The first-ever NAEP assessment of world history was originally scheduled to be given in 2012 to students in the 12th grade
- The assessment has been postponed with the intention of including it in the 2018 assessment cycle
- The assessment [framework](#), specifications, and background variables are being developed

Slide 38 of 46**NAEP Writing Assessment**

Students participating in the 2011 NAEP computer-based writing assessment responded to tasks designed to measure one of three communicative purposes common to many typical writing situations

- To persuade, in order to change the reader's point of view or affect the reader's action
- To explain, in order to expand the reader's understanding
- To convey experience (real or imagined), in order to communicate individual and imagined experiences to others

Data Collected Through the National Assessment of Educational Progress (NAEP)

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NAEP Writing Assessment (Continued)

- The 2011 assessment was the first NAEP computer-based writing assessment developed under a new writing [framework](#)
- Included 22 writing tasks including text, audio, photographs, video, or animation on the computer
 - Students composed their responses on laptops and had a handout to prepare
- Randomly assigned two 30-minute writing tasks
 - Students were shown a tutorial, then completed their writing tasks on laptops using word-processing software

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NAEP Writing Assessment (Continued)

Grade (Year)	Sample Question Types (Medium)
4 (2002)	<ul style="list-style-type: none"> • Describe very unusual day • Describe lunchtime • Convince the school librarian
8 (2011)	<ul style="list-style-type: none"> • Story about exploration of remote island • Article explaining change in thoughts or feelings • Letter persuading principal to require/not require community service
12 (2011)	<ul style="list-style-type: none"> • Story or personal narrative about real/imagined difficult choice • Essay about technology important to student • Letter persuading council to build/not build convenience store

Data Collected Through the National Assessment of Educational Progress (NAEP)

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Questionnaires for Students, Teachers, and Schools

- NAEP collects information that serves to fulfill reporting requirements of federal legislation and to provide a context for reporting student performance
 - Whenever feasible, NAEP includes information on special groups (e.g., information reported by race, ethnicity, socioeconomic status, gender, disability, and limited English proficiency) to inform group membership
- As part of most NAEP assessments, four types of questionnaires are used to collect background information:
 - Student questionnaires
 - Teacher questionnaires
 - School questionnaires
 - SD/ELL (students with disabilities/English language learners) questionnaires

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Questionnaires for Students, Teachers, and Schools (Continued)

- Student questionnaires collect background information on students' demographic characteristics, classroom experiences, and educational support (completed voluntarily by students; names are never reported)
- Teacher questionnaires gather background information on teacher training and instructional practices (completed by teachers at grades 4 and 8)
- School questionnaires gather background information on school policies and characteristics (completed by the principal or assistant principal)
- SD/ELL (students with disabilities or English language learners) questionnaires collect background information about students selected in the sample who have disabilities or limited English proficiency (completed by special education teacher, bilingual education/ESL teacher, or staff member who is most familiar with the student)
- Current background information [framework](#)

Data Collected Through the National Assessment of Educational Progress (NAEP)

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NAEP Student Background Questions

- A Student Background Questionnaire specific to each assessment and grade is administered as part of the NAEP assessment
 - A core set of questions are given to all students across all of the assessments
- Background questions provide context for reporting NAEP results
 - Address specific behaviors, not personal conclusions, attitudes, or beliefs
 - Are to be non-intrusive and free from bias, secular, neutral, and non-ideological
 - Follow multiple-choice format

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Example Student Background Questions

- Grade 4 core questions
 - Does your family get newspaper at least four times a week?
 - About how many pages a day do you have to read in school and for homework?
- Grade 4 subject-specific questions
 - How often do you read for fun on your own time?
 - So far this year, how many times have you written a book report?

Data Collected Through the National Assessment of Educational Progress (NAEP)

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Module Summary

Provided information about the data collected through the NAEP

- Assessment design and administration
- Long-Term Trend Assessment
- Main NAEP Assessments
- Background questionnaires for students, teachers, and schools

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Module Resources

- [National Assessment Governing Board \(NAGB\)](#)
- [NAEP Administration](#)
- [Multiple-choice](#)
- [Constructed-response](#)
- [Use of technology](#)
- [Multiple matrix sampling](#)
- [Item Response Theory \(IRT\)](#)
- [Long-Term Trend Reading Assessment](#)
- [Long-Term Trend Reading Assessment Framework](#)
- [Long-Term Trend Mathematics Assessment](#)
- [Long-Term Trend Mathematics Assessment Framework](#)
- [NAEP Arts Assessment](#)
- [NAEP Arts Assessment Framework](#)
- [NAEP Civics Assessment](#)
- [NAEP Civics Assessment Framework](#)
- [NAEP Economics Assessment](#)
- [NAEP Economics Assessment Framework](#)
- [NAEP Foreign Language Assessment](#)
- [NAEP Foreign Language Assessment Framework](#)
- [NAEP Geography Assessment](#)
- [NAEP Geography Assessment Framework](#)
- [NAEP Mathematics Assessment](#)
- [NAEP Mathematics Assessment Framework Changes](#)
- [NAEP Mathematics Assessment Frameworks](#)
- [NAEP Reading Assessment](#)
- [NAEP Reading Assessment Framework](#)
- [NAEP Science Assessment](#)
- [NAEP Science Assessment Framework](#)
- [NAEP Technology and Engineering Literacy \(TEL\) Assessment](#)
- [NAEP TEL Assessment Framework](#)
- [NAEP U.S. History Assessment](#)
- [NAEP U.S. History Assessment Framework](#)
- [NAEP World History Assessment](#)
- [NAEP World History Assessment Framework](#)
- [NAEP Writing Assessment](#)
- [NAEP Writing Assessment Framework](#)
- [Questionnaires for Students, Teachers, and School](#)
- [Background Information Framework](#)